

SMD Type 200 W

■ Features

1. Low profile and space saving
2. For surface mounted applications
3. RoHS compliant
4. Reliable low cost construction utilizing molded plastic technique
5. Glass passivated chip
6. Both bi-directional and uni-directional devices are available
7. Typical IR less than 1µA above 13V
8. Fast response time
9. Excellent clamping capacity
10. 200 W peak pulse power capability with a 10/1000 µs waveform, repetition rate (duty cycle): 0.01%



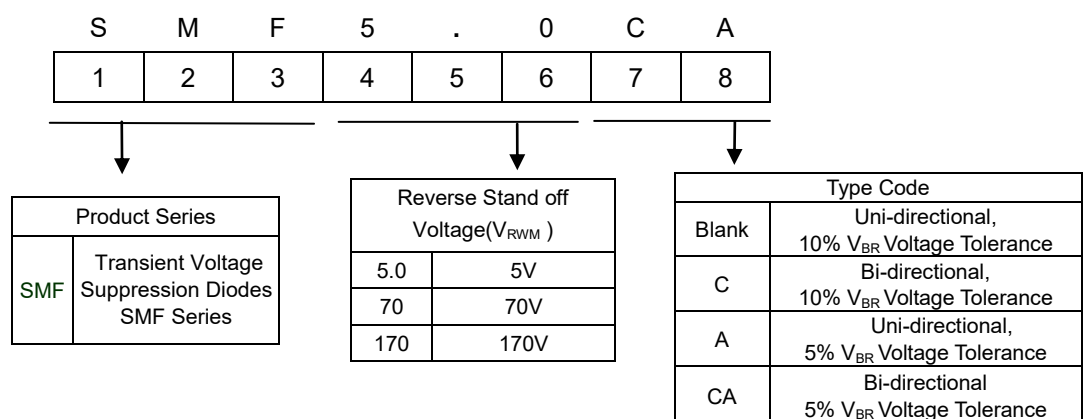
■ Recommended Applications

1. Telecommunication
2. Computer
3. Industrial device
4. Consumer electronic device

■ Mechanical Data

1. Case: SOD-123S, molded plastic meets UL flammability rating 94V-0
2. Terminal: Solder plated, solderable per MIL-STD-750 Method 2026.
3. Polarity: The band denotes cathode (Note: no polarity indicator for bi-directional devices)

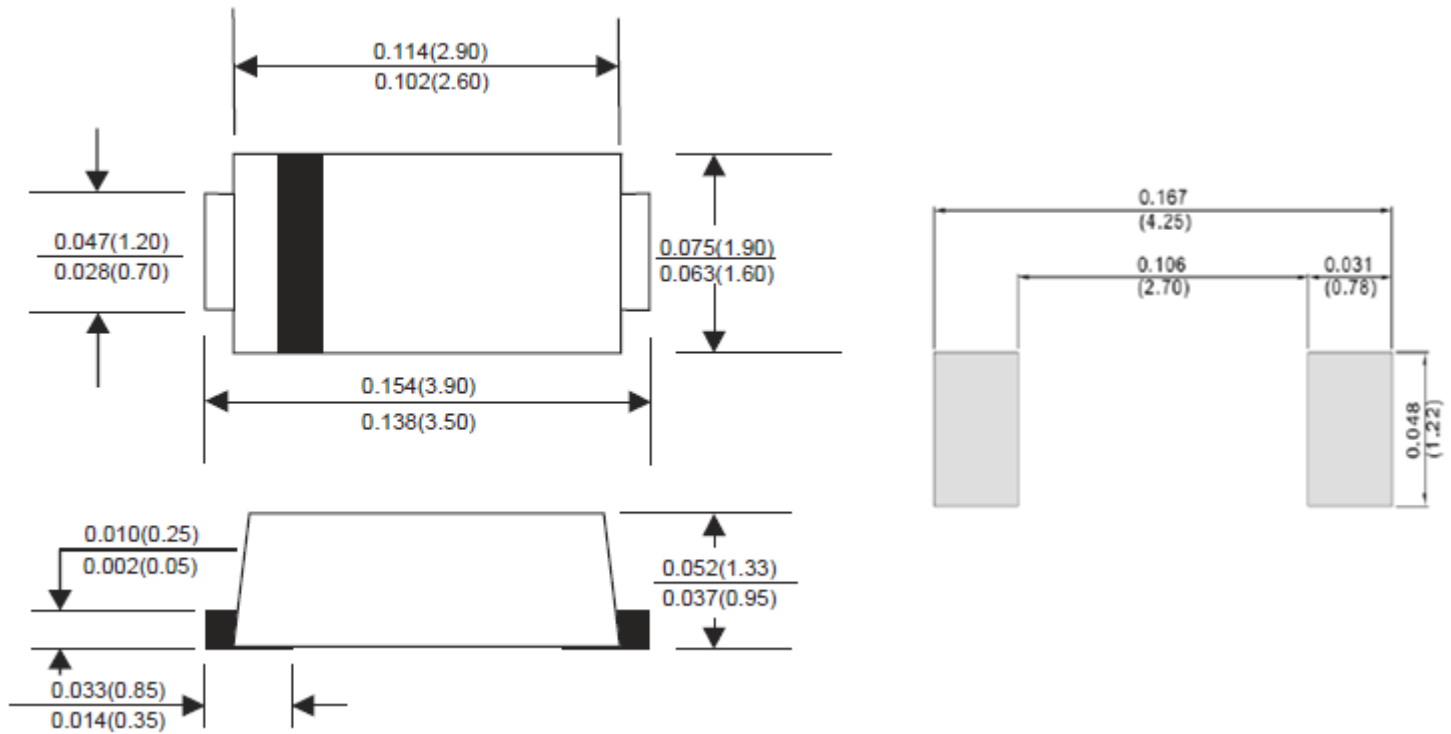
■ Part Number Code



SMD Type 200 W

Structures and Dimensions

SOD-123S



Dimensions : inches (millimeters)

Maximum Rating ($T_A=25^\circ\text{C}$ unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|--|-----------------------|-----------|------------------|
| Peak pulse power dissipation at $T_A=25^\circ\text{C}$ by 10/1000 μs waveform fig.1 (Note 1, Fig.4) | P_{PPM} | 200 | W |
| Peak Pulse Current of on 10/1000 μs waveform.(Note1, Fig.5) | I_{PPM} | See Table | A |
| Peak forward surge current, 8.3ms single half sine wave on rated load (Note 2, Fig.2.) | I_{FSM} | 20 | A |
| Steady State Power Dissipation at $T_L=75^\circ\text{C}$ (Fig.3). | $P_{\text{M(AV)}}$ | 0.4 | W |
| Operating junction and storage temperature range | T_J, T_{STG} | -55~+150 | $^\circ\text{C}$ |

Notes: 1. Non-repetitive current pulse, per Fig. 5 and derated above $T_A = 25^\circ\text{C}$ per Fig. 1.

2. 8.3ms single half sine-wave, or equivalent square wave, Duty cycle = 4 pulses per minutes maximum.

Transient Voltage Suppression Diodes: SMF Series

SMD Type 200 W

■ Electrical Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)

| Part No. (Uni) | Part No. (Bi) | Reverse Stand off Voltage | Breakage Voltage V_{BR} @ I_T | | Test Current | Maximum Clamping Voltage V_C @ I_{pp} | Maximum Peak Pulse Current | Maximum Reverse Leakage I_R @ V_{RWM} | Marking Code | |
|-------------------|------------------|---------------------------|-----------------------------------|---------|--------------|---|----------------------------|---|--------------|----|
| | | V_{RWM} (V) | Min (V) | Max (V) | I_T (mA) | V_C (V) | I_{pp} (A) | I_R (μA) | UNI | BI |
| SMF5.0A | SMF5.0CA | 5.0 | 6.40 | 7.00 | 10 | 9.2 | 21.7 | 400 | FE | KE |
| SMF6.0A | SMF6.0CA | 6.0 | 6.67 | 7.37 | 10 | 10.3 | 19.4 | 400 | FG | KG |
| SMF6.5A | SMF6.5CA | 6.5 | 7.22 | 7.98 | 10 | 11.2 | 17.9 | 250 | FK | KK |
| SMF7.0A | SMF7.0CA | 7.0 | 7.78 | 8.60 | 10 | 12.0 | 16.7 | 100 | FM | KM |
| SMF7.5A | SMF7.5CA | 7.5 | 8.33 | 9.21 | 1 | 12.9 | 15.5 | 50 | FP | KP |
| SMF8.0A | SMF8.0CA | 8.0 | 8.89 | 9.83 | 1 | 13.6 | 14.7 | 25 | FR | KR |
| SMF8.5A | SMF8.5CA | 8.5 | 9.44 | 10.4 | 1 | 14.4 | 13.9 | 10 | FT | KT |
| SMF9.0A | SMF9.0CA | 9.0 | 10.0 | 11.1 | 1 | 15.4 | 13.0 | 5 | FV | KV |
| SMF10A | SMF10CA | 10 | 11.1 | 12.3 | 1 | 17.0 | 11.8 | 2.5 | FX | KX |
| SMF11A | SMF11CA | 11 | 12.2 | 13.5 | 1 | 18.2 | 11.0 | 2.5 | FZ | KZ |
| SMF12A | SMF12CA | 12 | 13.3 | 14.7 | 1 | 19.9 | 10.1 | 2.5 | HE | LE |
| SMF13A | SMF13CA | 13 | 14.4 | 15.9 | 1 | 21.5 | 9.3 | 1 | HG | LG |
| SMF14A | SMF14CA | 14 | 15.6 | 17.2 | 1 | 23.2 | 8.6 | 1 | HK | LK |
| SMF15A | SMF15CA | 15 | 16.7 | 18.5 | 1 | 24.4 | 8.2 | 1 | HM | LM |
| SMF16A | SMF16CA | 16 | 17.8 | 19.7 | 1 | 26.0 | 7.7 | 1 | HP | LP |
| SMF17A | SMF17CA | 17 | 18.9 | 20.9 | 1 | 27.6 | 7.2 | 1 | HR | LR |
| SMF18A | SMF18CA | 18 | 20.0 | 22.1 | 1 | 29.2 | 6.8 | 1 | HT | LT |
| SMF20A | SMF20CA | 20 | 22.2 | 24.5 | 1 | 32.4 | 6.2 | 1 | HV | LV |
| SMF22A | SMF22CA | 22 | 24.4 | 26.9 | 1 | 35.5 | 5.6 | 1 | HX | LX |
| SMF24A | SMF24CA | 24 | 26.7 | 29.5 | 1 | 38.9 | 5.1 | 1 | HZ | LZ |
| SMF26A | SMF26CA | 26 | 28.9 | 31.9 | 1 | 42.1 | 4.8 | 1 | JE | ME |
| SMF28A | SMF28CA | 28 | 31.1 | 34.4 | 1 | 45.4 | 4.4 | 1 | JG | MG |
| SMF30A | SMF30CA | 30 | 33.3 | 36.8 | 1 | 48.4 | 4.1 | 1 | JK | MK |
| SMF33A | SMF33CA | 33 | 36.7 | 40.6 | 1 | 53.3 | 3.8 | 1 | JM | MM |
| SMF36A | SMF36CA | 36 | 40.0 | 44.2 | 1 | 58.1 | 3.4 | 1 | JP | MP |
| SMF40A | SMF40CA | 40 | 44.4 | 49.1 | 1 | 64.5 | 3.1 | 1 | JR | MR |
| SMF43A | SMF43CA | 43 | 47.8 | 52.8 | 1 | 69.4 | 2.9 | 1 | JT | MT |
| SMF45A | SMF45CA | 45 | 50.0 | 55.3 | 1 | 72.7 | 2.8 | 1 | JV | MV |
| SMF48A | SMF48CA | 48 | 53.3 | 58.9 | 1 | 77.4 | 2.6 | 1 | JX | MX |

Notes: For bidirectional type having V_{RWM} of 10 volts and less, the I_R limit is double.

Transient Voltage Suppression Diodes: SMF Series

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■ Electrical Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)

| Part No. (Uni) | Part No. (Bi) | Reverse Stand off Voltage | Breakage Voltage V_{BR} @ I_T | | Test Current | Maximum Clamping Voltage V_C @ I_{pp} | Maximum Peak Pulse Current | Maximum Reverse Leakage I_R @ V_{RWM} | Marking Code | |
|-------------------|------------------|---------------------------------|---|----------|-----------------|--|----------------------------------|--|-----------------|--------------|
| | | | V_{RWM} (V) | Min(V) | | | | | Max(V) | I_T (mA) |
| SMF51A | SMF51CA | 51 | 56.7 | 62.7 | 1 | 82.4 | 2.4 | 1 | JZ | MZ |
| SMF54A | SMF54CA | 54 | 60.0 | 66.3 | 1 | 87.1 | 2.3 | 1 | XE | NE |
| SMF58A | SMF58CA | 58 | 64.4 | 71.2 | 1 | 93.6 | 2.1 | 1 | XG | NG |
| SMF60A | SMF60CA | 60 | 66.7 | 73.7 | 1 | 96.8 | 1.8 | 1 | XK | NK |
| SMF64A | SMF64CA | 64 | 71.1 | 78.6 | 1 | 103 | 1.7 | 1 | XM | NM |
| SMF70A | SMF70CA | 70 | 77.8 | 86.0 | 1 | 113 | 1.5 | 1 | XP | NP |
| SMF75A | SMF75CA | 75 | 83.3 | 92.1 | 1 | 121 | 1.4 | 1 | XR | NR |
| SMF78A | SMF78CA | 78 | 86.7 | 95.8 | 1 | 126 | 1.4 | 1 | XT | NT |
| SMF85A | SMF85CA | 85 | 94.4 | 104 | 1 | 137 | 1.3 | 1 | XV | NV |
| SMF90A | SMF90CA | 90 | 100 | 111 | 1 | 146 | 1.2 | 1 | XX | NX |
| SMF100A | SMF100CA | 100 | 111 | 123 | 1 | 162 | 1.1 | 1 | XZ | NZ |
| SMF110A | SMF110CA | 110 | 122 | 135 | 1 | 177 | 1.0 | 1 | TE | PE |
| SMF120A | SMF120CA | 120 | 133 | 147 | 1 | 193 | 0.9 | 1 | TG | PG |
| SMF130A | SMF130CA | 130 | 144 | 159 | 1 | 209 | 0.8 | 1 | TK | PK |
| SMF150A | SMF150CA | 150 | 167 | 185 | 1 | 243 | 0.7 | 1 | TM | PM |
| SMF160A | SMF160CA | 160 | 178 | 197 | 1 | 259 | 0.7 | 1 | TP | PP |
| SMF170A | SMF170CA | 170 | 189 | 209 | 1 | 275 | 0.6 | 1 | TR | PR |

Notes: For bidirectional type having V_{RWM} of 10 volts and less, the I_R limit is double.

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Rate and Characteristic Curve ($T_A=25^\circ\text{C}$ unless otherwise noted)

FIG.1 - PULSE DERATING CURVE

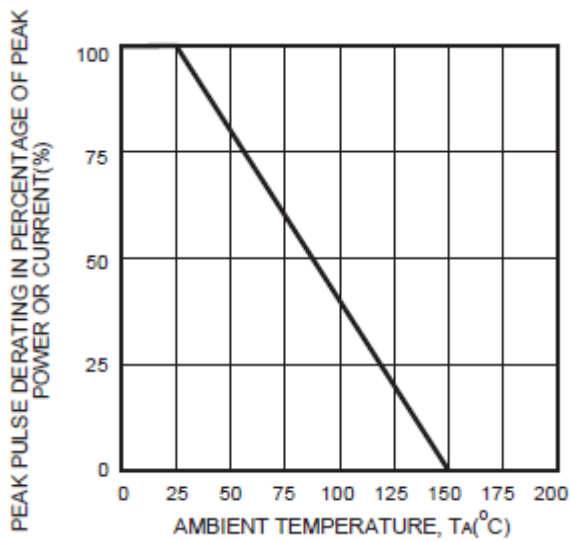


FIG.2- MAX. NON-REPETITIVE SURGE CURRENT

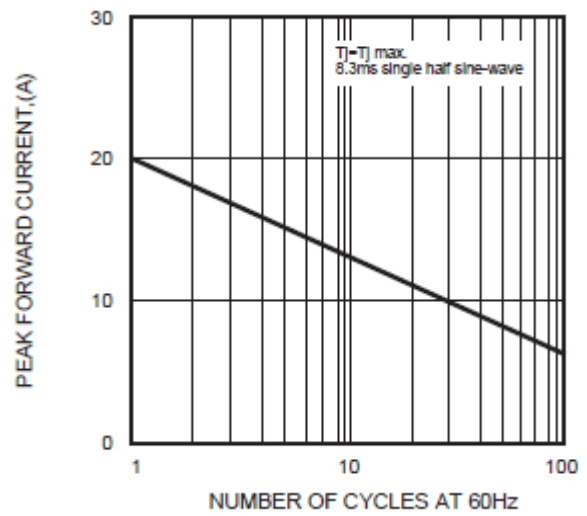


FIG.3 - STEADY STATE POWER DERATING CURVE

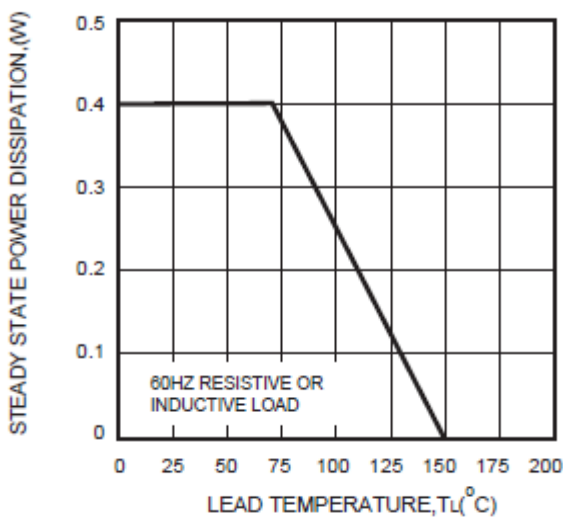


FIG.4- PEAK PULSE POWER RATING CURVE

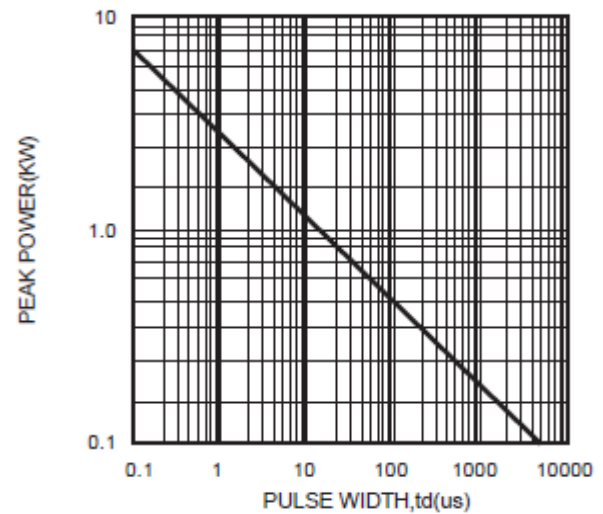


FIG.5 - PULSE WAVEFORM

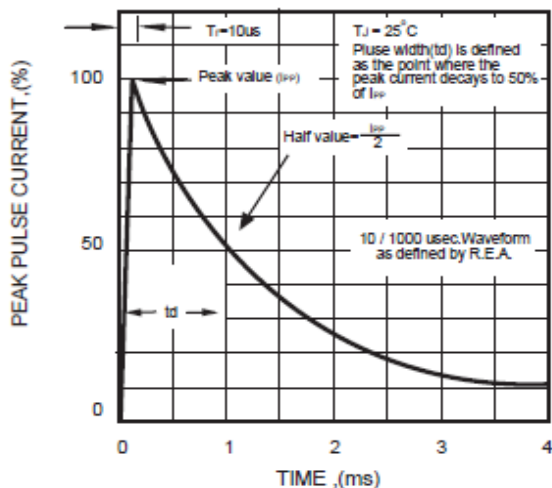
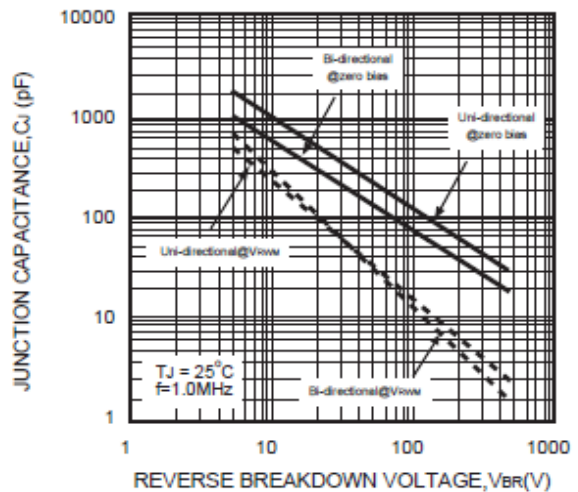
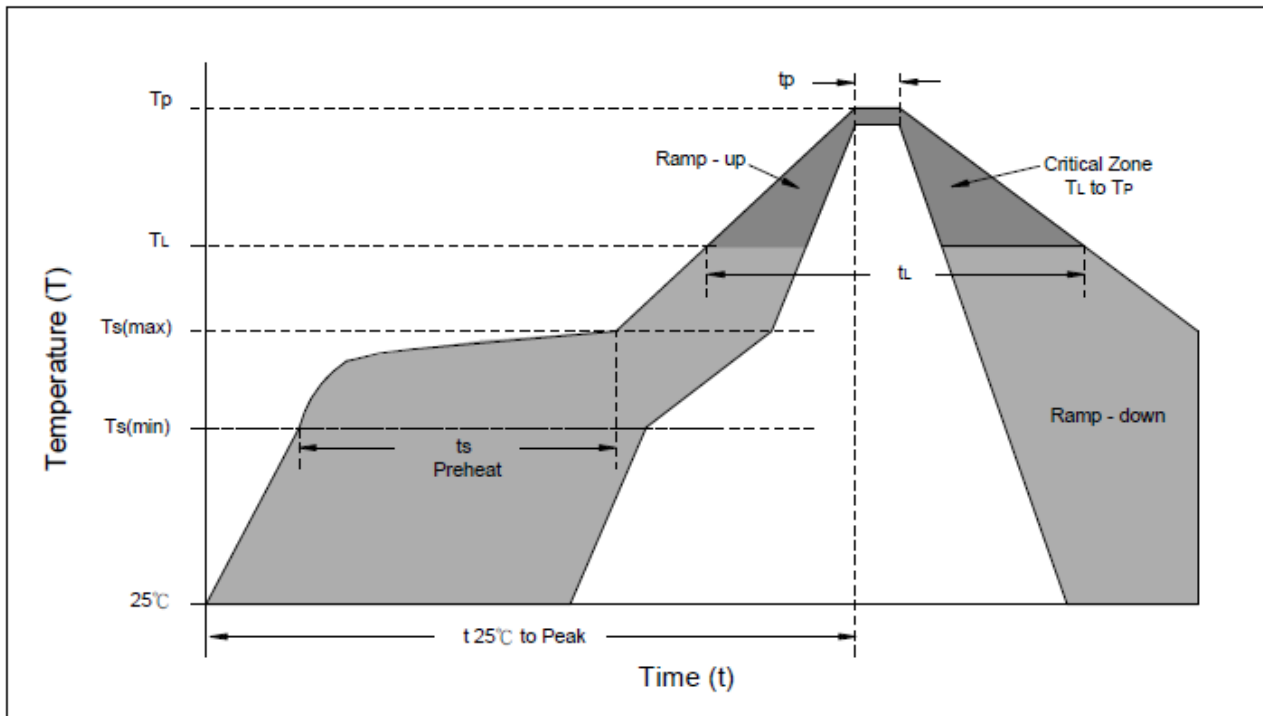


FIG.6 - TYPICAL JUNCTION CAPACITANCE



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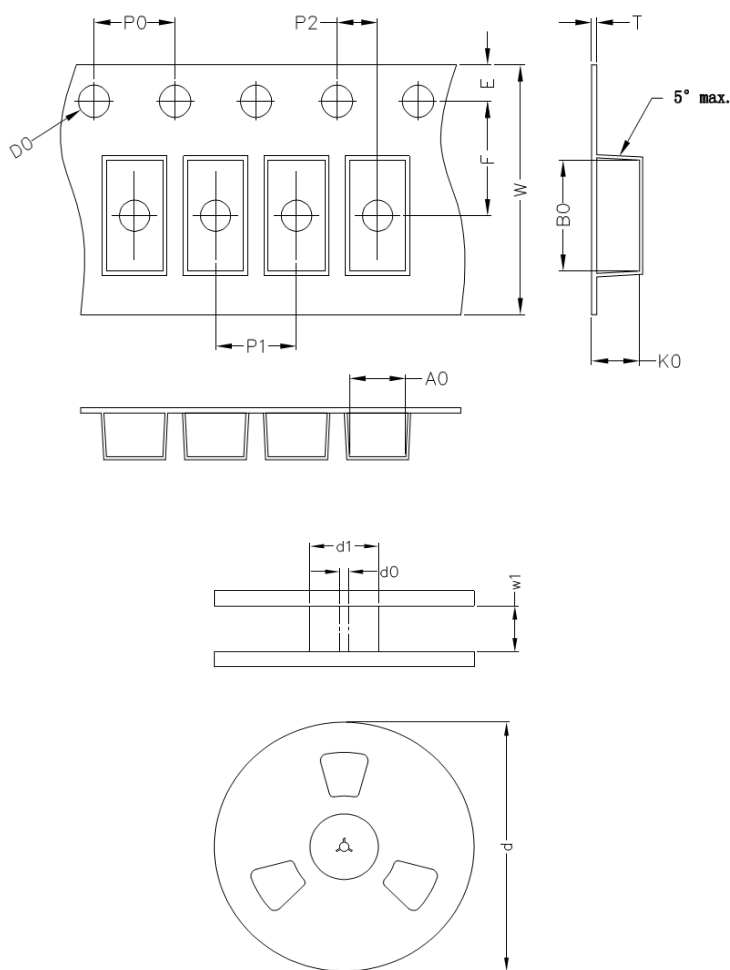
■ Soldering Recommendation



| Reflow Condition | Lead-free assembly |
|---|------------------------------------|
| Preheat -Temperature Min(Ts min) -Temperature Min(Ts max) -Time (min to max) (ts) | 150°C 200°C 60 – 180 seconds |
| Average ramp up rate -Temperature Liquidus (TL) to peak | 3°C/second max |
| Ts(max) to TL -Ramp-up Rate | 3°C/second max. |
| Reflow -Temperature Liquidus (TL) -Time (tL) | 217°C 60 – 150 seconds |
| Peak Temperature (TP) | 260°C |
| Time within 5°C of actual peak Temperature(TP) | 20 – 40 seconds |
| Ramp-down Rate | 6°C/second max. |
| Time 25°C to peak Temperature(TP) | 8 minutes max. |
| Do not exceed | 260°C |

SMD Type 200 W

■ Packaging



| Item | Symbol | SOD-123S 單位:mm |
|------------------------|--------|-------------------|
| Carrier width | A0 | 2.00 |
| Carrier length | B0 | 3.95 |
| Carrier depth | K0 | 1.45 |
| Sprocket hole | D0 | 1.55 |
| Sprocket hole position | E | 1.75 |
| Punch hole position | F | 3.50 |
| Sprocket hole pinth | P0 | 4.00 |
| Carrier pinth | P1 | 4.00 |
| Embossment center | P2 | 2.00 |
| Tape thickness | T | 0.23 |
| Tape width | W | 8.00 |
| Reel outside diameter | d (7") | 178.0 |
| Reel inner diameter | d1 | 60.00 |
| Feed hole diameter | d0 | 13.00 |
| Reel inner width | w1 | 9.50 |

Notes: The tolerance of carrier tape and top cover is $\pm 0.1\text{mm}$, the tolerance of reel is $\pm 2\text{mm}$

■ Quantity

| Package Type | Reel Size inch | Reel Kpcs | Inner Box Kpcs |
|--------------|-------------------|--------------|-------------------|
| SOD-123S | 7 | 3 | 30 |

■ Warehouse Storage Conditions of product

- Storage condition:
 - Storage Temperature: $-10^{\circ}\text{C} \sim +40^{\circ}\text{C}$
 - Relative Humidity: $\leq 75\% \text{RH}$
 - Keep away from corrosive atmosphere and sunlight.
- Period of Storage: 1 year.